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Panniculitis: A Concise Literature Review of its Terminology, Pathology, and Clinical Management

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Abstract

The article is devoted to a review of world literature on panniculitis, one of the pressing problems of modern dermatology. In this article, the author provide synonyms for panniculitis, proposes his own classification depending on the etiological factor, dwells on its cutaneous and visceral, pathomorphologically on lobular and septal forms, as well as on its clinical manifestations, treatment, prevention and prognosis.

Keywords: Panniculitis, literature review, modern dermatology, synonyms, classification, cutaneous, visceral, lobular, and septal forms, clinic, treatment, prevention and prognosis.

Introduction

Panniculitis (P) (from Latin panniculus – a scrap, a piece of cloth; synonyms: cellulitis, lipogranulomatosis, generalized lipogranulomatosis, disseminated lipogranulomatosis, Copeman P, subcutaneous lipogranulomatosis, subcutaneous lipogranulomatosis of Rothmann-Makai, Rothmann-Makai syndrome, lipogranuloma, lipoid granuloma, lipophagic lipogranuloma, idiopathic sclerosed lipogranuloma, fatty granuloma, traumatic lipogranuloma, oleogranuloma, spontaneous oleogranuloma, lipocalcinogranulomatosis, oleoma, adiponecrosis, fatty necrosis tissues, atrophic hypodermitis, mesenteric P, systemic spontaneous P, systemic nodular P, recurrent febrile nonsuppurative P, recurrent nonsuppurative nodular P, recurrent febrile nodular P, nodular P of Pfeiffer-Weber-Christian, Pfeiffer-Weber-Christian syndrome, P of Pfeiffer-Weber-Christian, Pfeiffer- Weber-Christian disease, P of Weber-Christian, Weber-Christian disease) – this is a group of diseases, which, as a rule, is mainly based on nonspecific inflammation of subcutaneous fat of various origins, primarily due to a violation of the lipid peroxidation process [1].

Discussion

P is considered a rare [2, 3] and poorly studied disease [4]. The incidence of P varies widely worldwide. This is due to the prevalence of a particular disease, which is an etiological factor in the development of P in this particular area. It is known that women aged 30–60 years are more likely to get sick, although P can occur at any age, even in children [5, 6]. Moreover, obese women get sick more often at the age of 20–40 years. Approximately half of cases of P are spontaneous forms of the disease, which occurs most often in women aged 20–50 years. The remaining 50% are cases of secondary P [7].

The etiology and pathogenesis of have not yet been fully studied [8]. The disease is polyetiological, the role of a lipotropic virus is not excluded. Presumably, the disease is based on an infectious-allergic nature, in which disorganization of adipose tissue occurs as a result of disruption of oxidative processes in it, accumulation of free carboxyl and aldehyde groups [9, 10]. Predisposing factors in the development of P can be injuries, exposure to low or high temperatures, infections, tumors, immune and hormonal disorders, taking medications, etc.

Pathomorphologically, acute inflammatory, macrophage and fibrous stages of changes in subcutaneous nodes are distinguished. Stage 1 is characterized by the presence of an inflammatory infiltrate between lipocytes, consisting of neutrophilic granulocytes, lymphocytes and histiocytes. In stage 2, the infiltrate consists mainly of histiocytes, a small number of lymphocytes and plasmocytes. Histiocytes phagocytize lypocytes transform into characteristic typical macrophages, the so-called foam cells, by which P is easily identified. In stage 3, areas with necrotic macrophages are filled among the infiltrate cells with fibroblasts, forming young collagen fibers [11]. Sometimes pronounced changes in the vessels are noted: swelling and thickening of the walls, proliferation of the endothelium, and occasionally their homogenization. The first stages clinically correspond to the compaction of the subcutaneous fat layer, and in stage 3 there may be atrophic sinking of the skin.

To date, there is no single generally accepted classification of P due to the contradictory aspects that exist within it [12, 13]. In this regard, in our opinion, depending on the etiological factor, P should be divided into

the following forms: 1. Traumatic P. 2. Artificial P [14, 15]. 3. Infectious P [16]. 4. Parasitic P [17]. 5. Intoxication P. 6. P developed due to the presence of vasculitis and connective tissue diseases. 7. Metabolic P [18]. 8. P developed due to a tumor process [19, 20]. 9. P developed due to venous congestion. 10. P developed around inflammatory foci, atheromas, etc. 11. Cold P. 12. Spontaneous P [21]. In addition, P is divided by localization into cutaneous and visceral forms, by the type of skin lesion – into nodular, infiltrative and plaque variants of the disease, and also pathomorphologically – into lobular and septal [22, 23].

Clinically, the local skin manifestations and the general symptoms depend on the form of P. The disease is characterized by the appearance of painful or, less commonly, painless nodes in the subcutaneous fat tissue in various parts of the body, with a diameter from several mm to 25–30 cm with signs of inflammation [24]. Patients experience subfebrile temperature, pain during movement and in the joints, accelerated ESR, mild anemia, and sometimes leukopenia. The nodes disappear and then reappear. According to the course, there are acute, subacute and chronic P. Most often the course is long: there are descriptions of over 20 years. Lesions of the fatty tissue of internal organs are described, in particular, the fatty tissue of the liver, lungs, heart, mediastinum, mesentery, omentum, etc. [25, 26].

The diagnosis of P is usually based on the study of a carefully collected anamnesis, clinical picture, increased levels of amylase and lipase activity in the skin and urine, decreased levels of antitrypsin in the blood, and the detection of foam cells during histological examination of the morphological substrate of the nodes, and the diagnosis is carried out collegially [27]. Differential diagnostics of panniculitis is carried out with its various forms, disseminated lipogranulomatosis (Farber's disease), insulin lipodystrophy, benign and malignant tumors, actinomycosis, sporotrichosis, gouty nodes, indurative tuberculosis, Darier-Roussy cutaneous sarcoids, pathomimia, cutaneous calcinosis, eosinophilic fasciitis, deep lupus erythematosus, necrosis of the subcutaneous fat of newborns, vascular hypodermitis, etc. [28, 29, 30].

Treatment of P is selected individually, depending on the course and the form of the disease and should be comprehensive. Usually antibiotics, salicylates, corticosteroids, immunosuppressants, non-narcotic analgesics, non-steroidal anti- inflammatory drugs, antihistamines and antimalarial drugs, hepatoprotectors, vitamins, and physiotherapy are prescribed [31]. During the period of remission, sanatorium and spa treatment in sanatoriums with a medical profile is recommended. These can be balneological resorts with sulphide and radon waters, mud resorts, etc.

Prevention comes down to the treatment of focal infection, prevention of injuries, excessive sun exposure, colds and other intercurrent diseases, as well as adherence to a hypoallergenic diet with limited fats and carbohydrates. After discharge from the hospital, patients should be under medical supervision.

The prognosis depends on the form of the disease. In the chronic form, it is favorable. In the subacute and especially acute form, the disease is quite serious. If the fatty tissue of internal organs is involved in the pathological process, a fatal outcome is possible.

Conclusion

From an analytical review of world literature it follows that P is a group of systemic, heterogeneous, polyetiological and orphan diseases with an unknown mechanism of their occurrence, which require further accumulation of observations with subsequent comprehensive study of them on a large sample of patients.

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